

CLAIMS

1 1. A tool holder apparatus comprising:

2 an elongated spindle adapted to be rotated about a turning

3 axis, and having an internally tapered opening at one end thereof connected to

4 an internally threaded bore formed along said turning axis;

5 an elongated tool holder having a first end for supporting a

6 cutting tool in a cutting position, and an externally tapered shank complementary

7 to and receivable in the tapered opening of the spindle;

8 the tool holder having a bore with a threaded section

9 opening to the end opposite the cutting position of a tool;

10 the tool holder having a radially expandable collar adjacent

11 said shank and joined to said shank;

12 the threaded bore of the tool holder and the threaded bore of

13 the spindle having opposite hand threads;

14 a screw having a first externally threaded section threadably

15 receivable in the internally threaded bore of the spindle, and a second externally

16 threaded section threadably receivable in the threaded bore of the tool holder,

17 such that as the screw is turned in a first direction about said turning axis, the

18 tool holder is moved toward the spindle and as the screw is turned in the

19 opposite direction, the tool holder is moved away from the spindle;

20 camming structure on the screw engageable with the radially

21 expandable collar of the tool holder to expand the expandable collar to engage

22 and wedge the tool holder collar in the spindle opening for a cutting motion.

1 2. A tool holder apparatus as defined in claim 1, including means for
2 preventing relative rotation between the tool holder and the spindle when the
3 tapered shank is inserted into the tapered opening of the spindle.

1 3. A tool holder apparatus as defined in claim 1, in which the tool
2 holder has an annular seat around the turning axis, and the screw moves the tool
3 holder along said turning axis so that said annular seat on the tool holder has
4 pressure engagement with an end face of the tool holder.

1 4. A tool holder as defined in claim 2, wherein the rotation-preventing
2 means comprises a pin-receiving opening in the spindle, facing a pin-receiving
3 opening in the tool holder, and including a pin disposed in both of said pin-
4 receiving openings to prevent the tool holder from turning about said turning axis
5 with respect to the spindle.

1 5. A tool holder as defined in claim 4, in which the pin-receiving
2 opening in the tool holder is disposed in a radial direction and intersects an
3 annular seat of the tool holder, and the pin-receiving in the spindle is disposed in
4 a radial direction and intersects an end face of the spindle.

1 6. A tool holder apparatus as defined in claim 1, in which the camming
2 structure comprises an annular camming collar located on the screw between the
3 first threaded section and the second threaded section.

1 7. A tool holder apparatus as defined in claim 1, in which the tool
2 holder carries an integrally mounted tool for a cutting motion.

1 8. A tool holder apparatus as defined in claim 1, in which the screw
2 has an end with a wrench-receiving opening, and the spindle bore provides
3 access through the spindle for a wrench to engage and turn the screw along said
4 turning axis.

1 9. A tool holder apparatus comprising:

2 an elongated spindle adapted to be rotated about a turning
3 axis, and having an internally tapered opening at one end thereof connected to a
4 bore extending from said tapered opening to the opposite end of the spindle
5 along said turning axis, at least a portion of said bore being internally threaded;

6 an elongated tool holder having a first end for supporting a
7 cutting tool in a cutting position, and an externally tapered shank at an
8 intermediate portion thereof, complementary to and receivable in the tapered
9 opening of the spindle;

10 the tool holder having a bore with a threaded section and
11 opening to the end opposite said first end;

12 the tool holder having a radially expandable collar adjacent
13 said shank;
14 a screw having a first end rotatably connected to the spindle,
15 and a second end threadably receivable in the tool holder bore; and
16 camming structure on the screw engageable with the radially
17 expandable collar of the tool holder to expand the collar to engage and wedge
18 the tool holder shank in the spindle for a cutting motion.

19